Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A substantially planar substrate in communication with at least one conducting element, wherein the substantially planar ~~structure~~ substrate comprises at least one nonplanar element for establishing and/or maintaining electrical communication with a cell, at least one channel in communication with a fluid source, at least one cell chamber, and at least one nonplanar element exposed to fluid flow from a fluid source, and wherein the nonplanar element is an integral part of the substantially planar substrate.

2. (Original) The substrate of claim 1, wherein the at least one nonplanar element comprises a raised portion having an opening in which a conducting fluid is disposed.

3. (Original) The substrate of claim 2, wherein the conducting fluid is in electrical communication with a conducting element.

4. (Original) The substrate of claim 1, wherein at least a portion of the nonplanar element comprises a conducting surface.

5. (Currently Amended) The substrate of claim 1, wherein the nonplanar element comprises a nonconducting surface.

6. (Currently Amended) The substrate of claim 1, wherein at least a portion of the substrate comprises a polymer.

7. (Original) The substrate of claim 6, wherein the polymer comprises an elastomeric polymer.

8. (Original) The substrate of claim 1, wherein at least a portion of the nonplanar element comprises a carbon material.

9. (Cancelled)

10. (Cancelled)

11. (Original) The substrate of claim 2, wherein the substrate is in communication with a pressure source for creating a resistant seal between a surface of the nonplanar element defining the opening and a cell in proximity to the opening.

12. (Original) The substrate of claim 1, wherein the substrate is in communication with a pressure source for creating an electrically resistant seal between a surface of the nonplanar element and a cell in proximity to the surface of the nonplanar element.

13. (Original) The substrate of claim 4 or 5, wherein the surface is nonplanar.

14. (Original) The substrate of claim 4 or 5, wherein the surface is protruding or rounded.

15. (Original) The substrate of claim 1, wherein the nonplanar element comprises a pipet tip, a capillary, or a micropipet.

16. (Original) The substrate of any of claim 12, wherein the nonplanar element comprises a pipet tip, a capillary, or a micropipet.

17. (Original) The substrate of claim 15, wherein the nonplanar element comprises a nonplanar surface for contacting a cell.

18. (Original) The substrate of claim 17, wherein the surface is protruding or rounded.

19. (Cancelled)

20. (Cancelled)

21. (Original) The substrate of claim 1 or 2, further comprising a voltage source for creating an electrically resistant seal between a surface of the nonplanar element defining the opening and a cell in proximity to the opening.

22. (Original) The substrate of claim 21, wherein the resistance of the seal is at least about 100 Mohm.

23. (Original) The substrate of claim 1, wherein the nonplanar element is pyramidal, conical, elliptical, toroidal, or comprises stacked planar elements.

24. (Currently Amended) The substrate of claim ~~9~~1, further comprising a cell chamber for receiving fluid from the fluid source and wherein the cell chamber comprises a plurality of the nonplanar elements.

25. (Currently Amended) The substrate of claim ~~9~~24, wherein fluid from the fluid source is provided to the cell chamber from one or more channels in the substrate.

26. (Original) The substrate of claim 1, wherein at least a portion of a surface of the nonplanar element is hydrophilic.

27. (Original) The substrate of claim 10, wherein fluid from the one or more channels creates one or more fluid streams for establishing and/or maintaining an electrically resistant seal between the cell and the opening of the nonplanar element.

28. (Original) The substrate of claim 10, further comprising a fluid controlling mechanism to

29. (Original) The substrate of claim 1, wherein a surface of the nonplanar element is modified by exposure to chemical washing.

30. (Original) The substrate of claim 1, wherein a surface of the non-planar element is modified by gas phase chemical deposition.

31. – 86. (Cancelled)

87. (Previously Presented) The substrate of claim 1, wherein the at least one nonplanar element comprises a portion of a wall.

88. (Previously Presented) The substrate of claim 87, wherein the wall is of a cell chamber.

89. (Previously Presented) The substrate of claim 18, wherein the protruding surface is one or more of a column, rod, reeve, surface defining an opening, or a portion of a wall.

90. – 92. (Cancelled)

93. (Currently Amended) A substantially planar substrate comprising a cell chamber comprising a protruded surface defining an opening in fluid communication with an electrode compartment, wherein the cell ~~camber~~ chamber is adapted to be in fluid communication with an external device, wherein one or more of the communications comprise microchannels, and at least one nonplanar

element exposed to fluid flow from a fluid source, wherein the nonplanar element is an integral part of the substantially planar substrate.

94. (Currently Amended) A substantially planar substrate comprising a reservoir in fluid communication with a cell chamber comprising a protruded surface defining an opening communicating with an electrode compartment, wherein one or more of the communications comprise microchannels and at least one nonplanar element exposed to fluid flow from a fluid source, wherein the nonplanar element is an integral part of the substantially planar substrate.

95. (Previously Presented) The substrate of claim 93 or 94, wherein the protruded surface comprises a column.

96. (Cancelled)

97. (Previously Presented) The substrate of claim 87, wherein the portion of the wall comprises a microchannel.

98. (Previously Presented) The substrate of claim 93 or 94, wherein the protruded surface defining an opening comprises a microchannel.

99. (Currently Amended) A system for providing fluid flow for establishing and maintaining an electrically resistant seal between a cell and a conducting element comprising a substantially planar substrate comprising a protruded surface defining an opening in fluid communication with an electrode compartment, wherein the substrate is adapted to be in fluid communication with an external device, at least one cell chamber, and at least one nonplanar element exposed to fluid flow from a fluid source, wherein the nonplanar element is an integral part of the substantially planar substrate.

100. (Previously Presented) The system of claim 99, comprising the conducting element.

101. (Previously Presented) The system of claim 100, wherein the conducting element is movable relative to the fluid source.

102. – 108. (Cancelled)

109. (New) The substrate of claim 1, comprising a cell chamber, an electrode compartment, at least one fluid source for establishing and/or maintaining a high electrical resistance seal between a cell, and a surface defining an opening in the cell chamber for separating a cell from the electrode compartment.

110. (New) The substrate of claim 109, wherein a surface of the substrate is modified to enhance the seal.

111. (New) The substrate of claim 110, wherein the modification comprises a non-planar or protruded surface.

112. (New) The substrate of claim 109, wherein the surface defining the opening comprises portions of a wall of the cell chamber.

113. (New) The substrate of claim 109, wherein the surface defining the opening comprises a nanoscale structure.

114. (New) The substrate of claim 113, wherein the nanoscale structure comprises a reeve, column, or rod.

115. (New) The substrate of claim 1, wherein the non-planar element is pyramidal-shaped, conical, elliptical, or toroidal.

116. (New) The substrate of claim 109, further comprising a plurality of microchannels.